NOTE

This Microfiche meets the quality requirements of the American National Standard for Microfiche of Documents (ANSI PH5.9-1975). However, because of imperfections in the document from which it was made, it contains images that are illegible or difficult to read. The source document for this microfiche is the best copy that could be obtained prior to filming.

CIS
Congressional Information Service
Washington, D.C.

Calendar No. 207

101ST CONGRESS
1st Session

SENATE

REPORT
101-107

RENEWABLE ENERGY AND ENERGY EFFICIENCY TECHNOLOGY COMPETITIVENESS ACT OF 1989

AUGUST 4 (legislative day, JANUARY 3), 1989.—Ordered to be printed

---

Mr. JOHNSTON, from the Committee on Energy and Natural Resources, submitted the following

REPORT

[To accompany S. 488]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 488) to provide Federal assistance and leadership to a program of research, development, and demonstration of renewable energy and energy efficiency technologies, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

PURPOSE OF THE MEASURE

The purpose of S. 488, as ordered reported, is to—

(1) establish technical performance goals for Federal renewable energy and energy efficiency research, development, and demonstration (RD&D) programs;

(2) authorize funding levels for renewable energy and energy efficiency RD&D for 3 years;

(3) provide generic authority for the Secretary of Energy to enter into joint ventures with the private sector to demonstrate the commercial application by the private sector of nonnuclear energy technologies; and

(4) require the Secretary to enter into six such joint ventures to assist the private sector in commercializing promising renewable energy and energy efficiency technologies.

29-010

S313-22.

Background and Need

BACKGROUND

During the 1970's, under the stimulus of oil price shocks in 1973–74 and in 1979, the Federal Government established a substantial program of research, development, and demonstration (RD&D) aimed at developing new sources of energy and new methods to use energy more efficiently. There was a broad consensus for this effort and considerable enthusiasm about its promise. In response to inflated oil prices throughout the 1970's, Congress made appropriations available in increasing amounts for energy RD&D in nuclear energy, fusion, solar and renewable energy, fossil energy, and energy conservation and for research into other, more exotic, energy forms.

In fiscal year 1980, Department of Energy budget (budget authority less receipts) was $12 billion. One quarter of the Department's 1980 budget was devoted to atomic energy defense activities. The remainder was spent on energy and basic science programs. Of this, approximately $3.8 billion was spent on civilian energy RD&D (in energy supply, fossil energy, and energy conservation research and development). The solar and renewable energy RD&D program (part of energy supply) received $278 million. The appropriations for fossil energy research and development, excluding the synthetic fuels program, were $835 million in fiscal year 1980. Energy conservation RD&D received $295 million.

By comparison, the current Department of Energy RD&D program, as it is portrayed by the budget for fiscal year 1989, is a substantially different one. The total budget for the Department was $11.7 billion in fiscal year 1989, but, of this, $8.1 billion was devoted to atomic energy defense activities. Civilian energy RD&D programs received about $2.8 billion. Energy conservation research and development received $166 million, and renewable energy research and development received $112 million.

The previous Administration's proposed fiscal year 1990 budget contained $86.6 million for renewable energy RD&D and $87.9 million for energy efficiency RD&D.

Two major factors contributed to this dramatic retrenchment in Federal support for energy RD&D.

First, since 1981, the Reagan Administration consistently advocated the restriction of Federal energy RD&D support to long-term, high-risk research on energy technologies. Under this view of federal support, development and commercial demonstration of energy technologies is the sole responsibility of the private sector, based on market forces. This policy was adopted during a period of inflated energy prices, a situation that does not exist today. The only exception to this policy during the 1980's was support for cost-shared joint ventures as a means of fostering the commercial demonstration of clean coal technologies.

The second major factor contributing to this retrenchment is the need to balance the Federal budget, which has led to across-the-board reductions in discretionary Federal spending. In spite of these budgetary pressures, Congress has consistently appropriated more than requested for Federal energy RD&D programs. Howev-

er, in no sense has Congressional support for these programs approximated the commitment to them that prevailed in the 1970's, nor can such a commitment be expected as long as these budgetary pressures continue.

These two factors have combined to create an environment of uncertainty in which neither the Federal Government nor private industry has sufficent incentive to undertake the commercial development of new energy technologies. This uncertainty has been most damaging to the commercialization of renewable energy and energy efficiency technologies. The majority of the firms that are concerned with the development of and deployment of the RD&D for these technologies are small businesses whose access to capital and ability to withstand soft markets are limited in the best of circumstances. As long as energy prices remain at present levels substantial obstacles to the commercialization of these technologies will exist. Indeed, many of the firms that were active in the commercialization of renewable energy and energy efficiency technologies have been forced to abandon their efforts.

This retrenchment has come at a time when international competition in renewable energy and energy efficiency technologies has been intensifying. It has also come at a time when many renewable energy and energy efficiency technologies are nearing commercial viability. In addition it occurs just when new markets for these technologies appear to be opening up.

The market share of United States firms in photovoltaics and wind energy machines, once strong, has declined significantly in the face of determined efforts by national governments in Japan, India, and Europe to underwrite their own emerging energy efficiency and renewable energy industries. Until 1983, U.S. manufacturers dominated the photovoltaics market, but by 1984 competitors were challenging this dominance.

For example, boosted by sales of photovoltaics for calculators, in 1985 Japan became the world leader in photovoltaics sales. The photovoltaic market for calculators will soon give way to a much larger market for photovoltaics to supply electric power in rural and remote environments.

Substantial growth in sales of photovoltaics through the 1990's for this application is widely anticipated. Foreign governments are mobilizing their own firms in preparation to challenge strongly for this growing market. In the U.S., support for photovoltaics remains a fraction of the level that could marshall a strong U.S. challenge.

Another example is wind energy technology, U.S.-manufactured wind machines dominated domestic installations through 1985. Foreign imports were limited to a small percentage of the annual installation rate until 1984, when Danish companies began to make inroads. In 1986, foreign imports exceeded the installation of domestic machines for the first time, by a two-to-one ratio.

At this critical juncture, the Federal Government has both withdrawn substantial support and raised the uncertainty about future support for its renewable energy and energy efficiency industries. What is jeopardized is domestic development of these technologies and the position of the U.S. industry in expanding world markets for such technologies.

NEED FOR THE LEGISLATION

Congressional testimony on the problems of making renewable sources of energy competitive in the U.S. economy has over and over again stressed—

(a) the need for stable and predictable Federal funding for the research efforts; and

(b) the need to continue support for renewable technologies right up to the threshold of commercialization.

Identical advice has been offered for new energy efficiency technologies.

In each case small- to intermediate-sized firms will play the greatest role in bringing forth marketable products from these technologies. These firms will face strong foreign competition, and will require assistance to be successful in their efforts. This is particularly true in view of the strong interest on the part of foreign governments in supporting their own renewable energy and energy efficiency manufacturing and marketing firms.

Testimony received on the needs of U.S. firms to successfully commercialize renewable energy and energy efficiency technologies stands in stark contrast to the previous Administration's policy of emphasizing primarily long-range, high-risk research and avoiding any Federal role in the commercialization process.

Over the past 7 years, Congress has attempted to provide additional resources for renewable energy and energy efficient RD&D. These efforts have served to maintain some valuable research for future application. However, current research capabilities are anything but optimal, especially given the opportunities that world markets appear to offer and the competition that is developing for these markets.

This legislation reflects recent agreement between Congress and the current Administration regarding goals and the redirection of existing Federal RD&D programs in renewable energy and energy efficiency to provide stable multi-year funding targets to achieve those goals. The principal additional mechanism needed to achieve these goals is specific authority for joint ventures between the Department and the private sector. Such joint ventures incorporate significant cost sharing with the private firms, similar to those now being used for the commercial demonstration of clean coal technologies.

If U.S. industry is to be effective in meeting foreign competition, there is a need to place more emphasis in the Department's RD&D programs on ensuring renewable energy and energy efficiency technologies actually find commercial application. While current policies support applied research, there is a lack of follow-through leading to marketable products. To address this concern, it is necessary to adjust the direction of Federal R&D programs to better address the needs of the firms that will eventually market these products. Greater private sector participation in these programs can be successful in providing this direction through cost-sharing arrangements. Cost sharing provides the essential discipline to ensure that the design of the program recognizes and incorporates the characteristics of the marketplace.

In renewable energy and energy efficiency research and development, there is an immediate need to provide assistance in this transition: from research, to prototype testing; to application; to commercial demonstration. However, the market-driven imperatives of commercialization will not become important to the design of the research until the risks have been reduced. Once these risks have been reduced, it is critical to involve the private sector in the transition from research ideas to products for the marketplace. To carry out this transition efficiently, it is necessary to work in close consultation with private firms, especially future customers for the technology. A proven vehicle for such cooperation is the cost-shared joint venture. Under these arrangements a substantial share of the design and cost of the program is borne by private firms. Moreover, the detailed management of any such project is entirely the responsibility of private participants.

In the case of energy efficiency and renewable energy RD&D, these cost-shared joint ventures can be particularly useful when the Federal Government plays a strong role in bringing together the interests of manufacturing firms and users in support of projects that can define costs and increase user confidence in the state of the technology.

What is needed is a partnership between the Federal Government, domestic manufacturers, marketers, and potential users of renewable energy and energy efficiency technologies. Without this partnership, the availability of these technologies for domestic industry could be substantially delayed. Meanwhile, other national governments are moving strongly in concert with their industry to commercialize these technologies for export. Without the development of a closer partnership provided for in this legislation, U.S. consumers may well be relegated in the future to dependence on Japanese or European firms for products derived from these technologies.

Legislative History

On March 1, 1989, S. 488 was introduced by Senator Fowler, for himself and Senators Bumpers, Ford, Metzenbaum, Bingaman, Conrad, Kerry, and Wirth. Subsequently 21 Senators (Senators Sanford, Murkowski, Pell, Matsunaga, Jeffords, Adams, Inouye, Cranston, Stevens, Mitchell, Leahy, Johnston, Baucus, Simon, Hatfield, DeConcini, Domenici, Reid, Burdick, Lieberman, and Gore) were added as cosponsors of S. 488.

A related bill, S. 1059, the "Renewable Energy Trade Equity and Promotion Act of 1989", was introduced by Senator Hatfield on May 18, 1989.

In the 100th Congress, the Committee considered S. 1554, a bill very similar to S. 488 and containing provisions of S. 1059. The Subcommittee on Energy Research and Development held hearings on S. 1554 on August 6, 1987. The Full Committee reported the bill favorably on September 22, 1988 (S. Rept. 100–523). The provisions of S. 1554 were adopted by the Senate by voice vote on October 5, 1988 as an amendment to H.R. 3048 and on October 21, 1988 by voice vote as part of H.R. 4505.

On March 14, 1989, the Full Committee, as part of hearings on S. 324 and the issue of global climate change, received testimony on the provisions of S. 324 addressing renewable energy and energy efficiency research and development. These provisions of S. 324 are based on S. 488.

The Subcommittee on Energy Research and Development held a hearing on S. 488 on June 15, 1989.

At the business meeting on July 19, 1989, the Committee considered S. 488, agreed to an amendment in the nature of a substitute, and then ordered S. 488 favorably reported.

Committee Recommendation and Tabulation of Votes

The Senate Committee on Energy and Natural Resources, in open business session on July 19, 1989, by unanimous vote of a quorum present recommended that the Senate pass S. 488, if amended as described herein.

The rollcall vote on recording the measure was 18 yeas, no nays, as follows:

YEAS	NAYS
Mr. Johnston	
Mr. Bumpers	
Mr. Ford [1]	
Mr. Metzenbaum [1]	
Mr. Bradley	
Mr. Bingaman [1]	
Mr. Wirth	
Mr. Conrad	
Mr. Heflin	
Mr. McClure	
Mr. Hatfield	
Mr. Domenici	
Mr. Wallop [1]	
Mr. Murkowski	
Mr. Nickles	
Mr. Burns	
Mr. Garn [1]	
Mr. McConnell [1]	

[1] Indicates voted by proxy.

Committee Amendment

During consideration of S. 488, the Committee adopted an amendment in the nature of a substitute. The principal changes in S. 488, made by the substitute adopted are described below. Additional details about the provisions of the bill as ordered reported are contained in the Section-by-Section Analysis section of this report.

1. Generic joint-venture authority

As introduced the bill required the Secretary, acting in accordance with the authority in the Federal Nonnuclear Research and Development Policy Act of 1974 (42 U.S.C. 5901–5920), to enter into six joint ventures with the private sector to commercialize renew-

able energy technologies. While the Committee believes that the Federal Nonnuclear Research and Development Policy Act of 1974 authorizes the Secretary to enter into cooperative agreements with private firms to reduce technology developed under the Act to commercially marketable products, the Department has on occasion indicated problems with the use of this authority in the case of joint ventures. To remove any doubt that the Secretary has authority to enter into joint ventures with the private sector to commercialize nonnuclear technologies, the Committee included section 2(c)(2) providing explicit generic joint-venture authority to the Secretary when acting in accordance with the Federal Nonnuclear Research and Development Policy Act of 1974.

The Committee understands that any joint venture under that Act or under S. 488 would be subject to the antitrust laws. The joint venture authority in S. 488 is not intended to convey to any person, association, corporation, or other business organization immunity from civil or criminal liability, or to create defenses to actions, under any antitrust law.

2. Definitions

The substitute changed the definition of "joint research and development venture" from an arrangement limited to a joint research and development venture under the National Cooperative Research Act of 1984 (98 Stat. 1815) to a more flexible "joint venture" agreement entered into by the Secretary with more than one non-Federal persons. Such a joint venture could be a joint research and development venture under the National Cooperative Research Act of 1984, but it is not required to be.

This definition does require the Secretary to solicit proposals for groups or consortia of private firms, or firms and non-profit entities, emphasizing industry-wide efforts at commercialization of renewable energy and energy efficiency technologies, as opposed to joint ventures involving only one company in an industry. The Committee does not intend and the bill does not authorize that conventional cooperative agreements between the Secretary and one company should qualify as a joint venture under the Act. Past arrangements of this type have not significantly furthered the commercialization of these technologies by the private sector. The Committee intends that the Department use the joint ventures under S. 488 to explore more action-forcing approaches to commercialization.

Subject to this requirement, the Committee intends that the Secretary, in consultation with the Advisory Committee established under the Act, develop criteria that balance the dual objectives of maximizing private-sector participation in joint ventures while facilitating the assembly of the total resources necessary to promote project success. The Committee also recognizes that the significant scientific and technical resources and facilities at the Department's national laboratories may be productively involved in successful joint ventures. Nothing in the definition of a joint venture precludes the participation of these laboratories. To the contrary, contribution to cost sharing, to the extent that participation by the laboratories is proposed by the non-Federal persons involved, and

approved in accordance with law, such participation can serve to complement the Secretary's cost-sharing.

The Committee understands that the Department's renewable energy and energy efficiency programs are currently engaged in various kinds of collaborative research and development efforts under the Federal Nonnuclear Research and Development Policy Act of 1974 and other existing law. The Committee provides 3 years of funding authorizations for these programs in section 5. The joint ventures required to be financed under section 6 are to be in addition to the Department's ongoing programs.

Committee intends that the efforts under current law be continued where appropriate. The Committee has also provided generic joint-venture authority to be used in the case of multiparty agreements that bring together institutional, capital, business, and technical capabilities that can facilitate industrial deployment of technology originally developed with Federal funding.

The Committee also added definitions of "small business", "non-Federal person", and "invention" to the bill.

3. Technical goals

The Committee removed the specific market penetration goals for federal renewable energy programs from section 4 of the bill. Market penetration depends on a myriad of factors that are beyond the influence of the Department, and government generally. Instead, the goals set forth in the bill emphasize improved cost and conversion efficiencies, which the Committee believes are clearly within the scope of federal research, development, and demonstration programs.

The Committee modified S. 488 to provide for a report by the Secretary at the time of transmittal of the President's fiscal year 1992 budget on average cost and other pertinent goals for other renewable energy and energy efficiency programs of the Department, including low-head hydroelectric and energy storage programs.

4. Multiyear authorizations

The substitute replaces subprogram authorization limits for individual renewable energy and energy efficiency programs with aggregate limitations by fiscal year for renewable energy and energy efficiency programs. The Committee intends the Department to have the flexibility to operate these individual programs without undue fear of inadvertent violation of federal spending limits. However, so there is no doubt about the Committee's views as to the intended distribution of these amounts, the authorization totals for renewable energy were derived from the following program-by-program assumptions:

(1) for the Wind Energy Research Program, an amount not to exceed $11,000,000 in fiscal year 1991, $12,000,000 in fiscal year 1992; and $12,000,000 in fiscal year 1993;

(2) for the Photovoltaic Energy Systems Program, an amount not to exceed $39,000,000 in fiscal year 1991; $40,000,000 in fiscal year 1992; and $40,000,000 in fiscal year 1993;

(3) for the Solar Thermal Energy Systems Program, an amount not to exceed $16,000,000 in fiscal year 1991;

$17,000,000 in fiscal year 1992; and $17,000,000 in fiscal year 1993;

(4) for the Biofuels Energy Systems Program, an amount not to exceed $16,000,000 in fiscal year 1991; $17,000,000 in fiscal year 1992; and $17,000,000 in fiscal year 1993;

(5) for the Solar Buildings Energy Systems Program, an amount not to exceed $7,000,000 in fiscal year 1991; $8,000,000 in fiscal year 1992; and $8,000,000 in fiscal year 1993;

(6) for the Ocean Energy Systems Program, an amount not to exceed $4,000,000 in fiscal year 1991; $5,000,000 in fiscal year 1992; and $5,000,000 in fiscal year 1993; and

(7) for the Geothermal Energy Program, an amount not to exceed $20,000,000 in fiscal year 1991; $22,000,000 in fiscal year 1992; and $25,000,000 in fiscal year 1993.

Similarly, the authorizations for energy efficiency research, development and demonstration programs were derived from the following assumptions:

(1) for transportation energy research, development, and demonstration, an amount not to exceed $66,000,000 in fiscal year 1991; $67,000,000 in fiscal year 1992; and $68,000,000 in fiscal year 1993;

(2) for industrial energy efficiency research, development, and demonstration, an amount not to exceed $54,000,000 in fiscal year 1991; $55,000,000 in fiscal year 1992; and $56,000,000 in fiscal year 1993;

(3) for building and community systems energy efficiency research, development, and demonstration, an amount not to exceed $37,000,000 in fiscal year 1991; $37,000,000 in fiscal year 1992; and $37,000,000 in fiscal year 1993;

(4) for multi-sector energy efficiency research, development, and demonstration, an amount not to exceed $35,000,000 in fiscal year 1991; $36,000,000 in fiscal year 1992; and $37,000,000 in fiscal year 1993 and

(5) for energy efficiency research, development, and demonstration policy and management, an amount not to exceed $4,000,000 in fiscal year 1991; $4,000,000 in fiscal year 1992; and $4,000,000 in fiscal year 1993.

The Committee developed the foregoing estimates of specific funding needs on the basis of current program status. The Committee intends that the Secretary view these estimates as a point of departure, within the aggregate authorizations provided by the Act, as the relevant level of effort in specific program areas. As the Secretary updates multi-year plans and program priorities, and as RD&D payoffs are achieved, the Committee will consider alternate specific program formulations as part of the annual authorization process.

5. Report on options and new initiatives

Under the substitute, the report by the Secretary on options for commercialization under existing law and his recommendations for the development of new initiatives would involve both renewable energy and energy efficiency technologies. The requirement to make recommendations on new initiatives is extended in the substitute to require action by the Secretary in fiscal years 1992 and

1993 to give the Secretary additional time to develop these initiatives.

6. Joint ventures

The substitute makes substantial changes in section 6, the joint venture section.

a. Solicitations

The Secretary would conduct a competitive solicitation of industry proposals for at least one joint venture in each of the six technology categories set forth in subsection (c). The Committee believes that the use of solicitations will allow the private sector a more substantial role in defining the joint ventures to be undertaken.

The Secretary has the responsibility to make the decision to accept or reject proposals submitted as a result of the solicitations. This responsibility includes the authority to reject all the proposals submitted if none meets the criteria for selection. However, the Secretary is expected to conduct additional solicitations if a first effort does not produce satisfactory proposals. The discretion afforded to the Secretary by subsection (d) to redefine a joint venture category and solicit substitute joint venture proposals to commercialize alternative renewable energy and energy efficiency technologies should be used only after it is clear that it is unlikely that satisfactory proposals will be submitted that meet the criteria in subsection (c).

b. Domestic research and development

Joint venture activities under this section may not be carried out in foreign nations. This provision does not express a prejudice against research, development, and demonstration activities of the Department that involve participation of foreign nations or that support work carried out overseas. Rather the Committee intends that the transfer of technology to commercial practice through joint ventures with the private sector under this section be employed to enhance the competitiveness of the domestic industry rather than its foreign counterparts.

The restrictions in this section apply to joint ventures to commercialize technology. The Committee does not intend the restrictions of this section to apply to cooperative agreements to conduct research and development. In particular, the Committee does not intend to preclude the transfer of scientific knowledge into the United States through cooperative research and development efforts.

c. Cost sharing

The substitute requires at least 50 percent of the direct costs of a joint venture to be provided from non-Federal sources. The substitute provides that the amount of cost sharing proposed must be one of the criteria for selecting among proposals. The 50-percent requirement provides a tangible demonstration of the commitment of the private sector applicants to mobilize the resources necessary for a successful joint-venture project. The Secretary may reduce

this percentage in the case of proposed joint ventures composed of small businesses, non-profit entities, or a combination thereof.

The Committee believes that several options are available to small businesses that are consistent with a full 50-percent contribution to direct costs. These include: pooling of resources among a number of small businesses or associations of such businesses; participation by manufacturers, suppliers, and investors; ventures involving both small and large businesses; participation by businesses and utilities, builders, or developers; participation by businesses in collaboration with State and local government.

The term "direct costs" is used to emphasize that the contributions must be directly relevant to a proposed venture. These contributions must include cash and personnel, services, equipment, or other resources directly and specifically related to actual performance under the joint venture.

d. Advisory committee

The bill as introduced provided for seven advisory committees to assist in the development of the program. The substitute provides for only one such committee, which is given authority to appoint subcommittees as it deems necessary. This committee would advise the Secretary in establishing procedures and criteria for the solicitations under this section, but would not be engaged in evaluating or selecting the specific proposals themselves.

e. Draft solicitation and management plan

The substitute provides for public comment on the Secretary's implementation of the joint-venture provisions through draft solicitations to draft management plan. The Secretary is expected to review comments received during this process and then publish a final plan and solicitation no later than 180 days after the date of enactment. The Committee expects that the management plan will be an important guide of what is expected from private sector participants who wish to become involved in the program.

f. Proprietary information

The Committee is aware that the success of a joint venture will depend on providing an environment attractive to industrial participation in cost-shared research with the potential for commercial returns. For consistency in policy, the Committee has adopted the provisions originally enacted as section 5 of the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988. These provisions safeguard proprietary and other commercially sensitive data or information contained in proposals or generated in the course of a joint venture. These provisions also ensure an appropriate disposition of rights and benefits from any inventions that may come into being as a result of a joint venture.

g. Energy efficiency joint venture

The substitute deletes an "export technology projects" joint venture from subsection 6(c) and substitutes a joint venture in energy efficiency technology. The Committee determined that the promotion of renewable energy and energy efficiency exports that would have been addressed under the deleted joint venture would better

be encouraged by working through an expanded Committee on Renewable Energy, Commerce, and Trade (CORECT) established under Public Law 98–370 and funded under section 7 of the bill. The funding proposed for the deleted export technology projects joint venture is distributed in the substitute among the remaining joint ventures and to authorizations for CORECT contained in section 7.

h. Secretarial discretion

The substitute provides the Secretary with additional discretion in seeking to substitute alternative renewable energy or energy efficiency technologies for one of the six joint-venture solicitations required under subsection (c). This includes a determination by the Secretary that the required joint venture will compete with or substantially substitute for research, development, and demonstration activities already financed by the private sector.

i. Additional proposals

At the time the fiscal year 1993 budget is submitted, the substitute requires the Secretary to recommend to Congress at least three additional solicitations of proposals for joint ventures to encourage commercialization of renewable energy and energy efficiency technologies. The Committee moved forward the time at which these additional solicitations would be required to permit the Secretary additional time to gain experience with the joint ventures required under subsection (c). The Secretary is authorized under this Act and other law to enter into joint ventures to assist in the commercialization of renewable energy and energy efficiency technologies. The purpose of the submission under this section would be to receive specific Congressional funding authorization for the three proposed solicitations.

7. CORECT

The substitute modifies the provisions of the original bill affecting the Committee on Renewable Energy, Commerce, and Trade (CORECT) to treat energy efficiency technologies on an equal footing with renewable energy technologies in the tasks assigned to CORECT under the Act. These tasks include the reporting by CORECT members of actions taken in the previous year to achieve the purposes of CORECT and the development of a plan to maintain or increase the exports of these technologies. Authorization levels for CORECT were increased to reflect a redistribution of funding eliminated by the deletion of an export technology joint venture contained in the original bill.

8. Amendments to existing laws

The substitute adds two amendments to section 256 of the Energy Policy and Conservation Act, which establishes CORECT. These amendments are based on provisions of S. 1059. They expand the requirements of the CORECT statute to include the provision of additional information to foreign nations concerning renewable energy and energy efficiency technologies developed by American firms.

9. Reports

The substitute provides for a management plan to govern activities under the Act and directs the Secretary of Energy to report annually on the applicability for use in Federal facilities of renewable energy and energy efficiency technology products being developed under the Act.

Section-by-Section Analysis

Section 2. Findings, purposes, and general authority

Section 2 of the bill sets forth the findings and purposes of the Act and confers general authority on the Secretary to enter into joint ventures with the private sector to achieve these purposes.

An important purpose of the Act is to shift the focus of efforts of the Department of Energy in research, development, and demonstration in renewable energy and energy efficiency technology towards technology transfer to the private sector. The objective is the realization in commercial terms of product deployment in the marketplace as the fruits of the long-range, high-risk research that the Department has previously emphasized. Accordingly, the bill seeks a significant new emphasis on the commercialization of renewable energy and energy efficiency technology through joint ventures with groups or consortia of private firms so as to bring the private sector into a partnership role in the development of marketable products from federally-sponsored renewable energy and energy efficiency activities.

The Committee recognizes that the Department is currently engaged in various collaborative research efforts on renewable energy and energy efficiency technologies. The joint-venture authority is provided in the legislation to enable the Department to undertake multi-party arrangements to facilitate industrial deployment, manufacture, and marketing of products derived from these technologies.

Section 3. Definitions

Section 3 contains the definitions of terms used in the Act, including a definition of "joint venture" that contemplates the formation of groups or consortia of private sector firms to commercialize renewable energy and energy efficiency technology.

The Committee intends a broader definition of joint venture than is used in the National Cooperative Research Act of 1984. This broader definition reflects the wide range of engineering, design, manufacturing, and service industries involved, or potentially involved, in commercialization of renewable energy and energy efficiency technologies. This definition is intended to provide flexibility to the private sector in shaping and the Department in selecting joint ventures with the highest likelihood of commercial success.

Nothing in the definition does or is intended to preclude participation of the Department's national laboratories.

Section 4. National goals

Section 4(a) establishes general and technical performance goals for Department of Energy programs in wind energy, photovoltaics,

and solar thermal research, development, and demonstration (RD&D). This provision requires the Secretary of Energy to submit proposed goals for other programs in renewable energy RD&D as part of the 1992 budget request.

Section 4(b) provides for the amendment of goals by the Secretary, when appropriate.

It is not intended that the goals in this section should reduce the flexibility of program managers in the Department or circumvent the internal review process that developed the current program objectives. Rather, the role of these goals is to facilitate agreement between the Administration and Congress concerning these program objectives so that progress can be assessed on an annual basis and proposed budgets can be evaluated in relation to this progress. The Department is expected at all times to strive to meet the goals set forth in the section and to make full use of the authority in subsection (b) to propose amended goals to continue the dialogue with Congress over the pace and direction of these programs.

The Committee recognizes that these goals are influenced by factors beyond the control of the Department. The Committee thus anticipates that the Department will incorporate into its review of these goals the inputs of relevant Federal agencies, State and local authorities, technology manufacturers, and energy producer and consumer organizations.

Section 5. Multi-year authorizations

Section 5(a) provides authorizations for fiscal years 1991–1993 for renewable energy programs of the Department in wind energy, photovoltaics, solar thermal energy, biofuels, solar buildings, ocean thermal energy and geothermal energy. Total amounts are authorized as follows: $113 million for fiscal year 1991, $121 million for fiscal year 1992, and $124 million for fiscal year 1993. The intended allocation of these amounts to subprograms in renewable energy RD&D is indicated in the Committee Amendment section of this report.

Section 5(b) authorizes appropriations for fiscal years 1991–1993 for energy efficiency RD&D programs in transportation, industrial energy efficiency, buildings and community systems, multi-sector, and policy and management. Total amounts are authorized as follows: $195 million for fiscal year 1991, $199 million for fiscal year 1992, and $204 million for fiscal year 1993. The intended allocation of these amounts to subprograms in energy efficiency RD&D is indicated in the Committee Amendment section of this report.

Section 5(c) requires the Secretary of Energy to submit to Congress by May 1, 1991 a report on options available to the Secretary under existing law to assist the private sector in the timely commercialization of renewable energy and energy efficiency technologies.

Section 5(d) requires the Secretary of Energy to recommend amounts to be set aside in his budget requests for fiscal years 1992 and 1993 funds for new initiatives in renewable energy and energy efficiency RD&D. Compliance with this subsection will offer the Secretary an opportunity to highlight new ideas from the private sector or from the national laboratories that have potential to stimulate new areas of renewable energy or energy efficiency research,

development, and demonstration. These provisions also offer the Secretary an opportunity to review the priority that is assigned to existing programs and projects in the light of the new ideas that may have been developed.

Section 6. Joint ventures

Section 6(a) sets forth the findings and purpose for this section.

Section 6(b) requires the Secretary of Energy to conduct a competitive solicitation of industry proposals for and to provide financial assistance to at least six joint ventures to assist the private sector in commercializing renewable energy and energy efficiency technologies. These joint ventures are to address commercialization issues in wind energy, photovoltaics, solar thermal energy, energy efficiency, factory-made housing, and advanced district cooling. In addition, the Secretary has generic authority to enter into joint ventures of this type under section 2(c) of the Act.

The Secretary could conduct more than one solicitation and could provide financial assistance to more than six joint ventures under this section. This section requires the Secretary to select at least six such joint ventures. The Committee intends that joint ventures under the Act be responsive to the needs and commitments of the private sector, which must carry the burden for accepting the challenges and risks of deploying innovative technology into the marketplace.

At least 50 percent of the direct costs of any joint venture must be provided from non-Federal sources. The Secretary may reduce this percentage under certain circumstances when the joint venture is composed of non-profit entities or small businesses. The Committee expects that the Department will encourage the pooling of resources among small businesses and the formation of cooperative relationships involving small businesses with other entities capable of supplying capital so that the cost-sharing requirement of this section will not preclude promising joint ventures.

The extent of cost sharing would be a criterion in the selection of proposals.

An Advisory Committee on Renewable Energy and Energy Efficiency Joint Ventures, and any subcommittees thereof the Secretary may appoint, would offer advice to the Secretary as he designs the solicitations, develops evaluation criteria, and carries out a selection process for proposals. This Advisory Committee would also assist the Department in establishing criteria that balance the objectives of maximizing private sector participation in joint ventures while developing the necessary resources for a successful venture.

It is not intended that the Advisory Committee engage in any functions other than the provision of advice to the Secretary. The Advisory Committee would not be involved in the actual selection of proposals.

The Secretary is required to seek public comment in the design of these solicitations and must publish a management plan to govern his activities under the section. The Committee intends that the management plan be a significant document in communicating the intent of the Department to prospective participants in the program regarding implementation of the program, the solicitations of proposals, and the management of joint ventures.

Each venture is described in section 6(c). This section also provides a total of $16.8 million in authorizations for the six ventures for each of the fiscal years 1991-1993. These authorizations are in addition to the amounts authorized for on-going programs under section 5.

Section 6(d) authorizes the Secretary under certain circumstances to substitute alternative joint ventures for any of the six specified in the bill. The Committee intends that this authority be used by the Secretary when solicitations under one or more of the paragraphs of subsection (c) does not produce satisfactory proposals under the criteria of subparagraphs (d)(1) (A) to (D). The authority of the subsection can also be used if the Secretary determines that no solicitation under a particular paragraph is likely to produce proposals that can survive the criteria. However, it should be clear that the authority of subsection (d) may not be used to circumvent the requirement that at least six joint ventures be selected for financial assistance. The subsection simply offers the Secretary considerable discretion in designing these six joint ventures to advance the purposes of the Act.

Subsection 6(e) requires the Secretary to recommend to Congress, for possible authorization in fiscal year 1993, at least three additional solicitations of proposals for joint ventures to encourage commercialization of renewable energy and energy efficiency technologies. The Committee believes that the Secretary is likely to find the joint-venture mechanism useful in transferring renewable energy and energy efficiency technologies to the private sector. The Committee also believes that the Secretary, after experience with the joint ventures required under this section, should go through the discipline of developing proposed solicitations of his own and should thereafter seek funding by Congress for the joint ventures envisioned under these solicitations.

To assist in providing an environment attractive to industrial participation in cost-shared commercialization efforts, the Committee has included the provisions of section 5 of the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988 to safeguard proprietary and otherwise commercially sensitive business or technical data contained in proposals or generated as a result of a joint venture.

Section 7. Renewable energy and energy efficiency technology exports

Section 7 requires the Secretary of Energy to review the activities of the Committee on Renewable Energy, Commerce and Trade (CORECT) and requires the CORECT to establish a joint government-industry plan to increase United States exports in renewable energy and energy efficiency technologies and products. Energy efficiency and renewable energy are treated in a symmetric fashion in this section, which adds a significant new responsibility to CORECT to promote exports of energy efficiency technology.

A total of $12 million is authorized for the activities of CORECT for fiscal years 1991-1993.

Section 8. Renewable energy

This section amends existing law to—

Provide for the dissemination of information on the benefits of renewable energy and energy efficiency technology derived from experience with the Federal Energy Management Program of the Department of Energy;

Make reduced energy costs a goal of investments by the Department of Defense in housing;

Authorizing funding of incentives, grants and studies for renewable energy under Overseas Private Investment Corporation loans;

Modify the organic statute of the Committee on Renewable Energy, Commerce, and Trade to further encourage the dissemination of information on renewable energy and energy efficiency technologies to foreign countries.

The Committee is aware that a variety of information exists regarding the applicability of renewable energy and energy efficiency technologies. In the section, the Committee does not intend to create new programs or require major incremental expenditures of appropriated funds. Rather, the Committee intends that the Department organize and disseminate available information to Federal procurement officials and others concerning the technologies that are available in the short term to meet the energy requirements of the Federal Government and other entities receiving the information.

Section 9. Reports

This section requires an annual report by the Secretary of Energy to Congress on activities under the Act and the publication of a management plan to govern activities of the Secretary under the Act. The management plan will include a strategy for commercializing the results of renewable energy and energy efficiency technology RD&D. The section also requires the Secretary to report annually on renewable energy and energy efficiency technologies that are projected by the Secretary to be cost-effective when converted to products and that could be deployed be Federal agencies.

Cost and Budgetary Considerations

The following estimate of the cost of this measure has been provided by the Congressional Budget Office:

U.S. Congress,
Congressional Budget Office,
Washington, DC, July 24, 1989.

Hon. J. Bennett Johnston, Jr.,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has prepared the attached cost estimate for S. 488, the Renewable Energy and Energy Efficiency Technology Competiveness Act of 1989.

If you wish further details on this estimate, we will be pleased to provide them.

Sincerely,

Robert D. Reischauer,
Director.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

1. Bill number: S. 488.

2. Bill title: Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989.

3. Bill status: As amended and ordered reported by the Senate Committee on Energy and Natural Resources, July 19, 1989.

4. Bill purpose: S. 488 establishes national research and development goals for federal wind, photovoltaics, and solar thermal programs, and authorizes funds for these and other renewable energy and energy efficiency programs. The bill also authorizes funds to enhance current efforts to promote exports of renewable energy and energy efficiency technology. The bill authorizes appropriations totaling $329 million for fiscal year 1991, $341 million for fiscal year 1992, and $349 million for fiscal year 1993.

5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1990	1991	1992	1993	1994
Authorization level		329	341	349	
Estimated outlays		103	274	332	236

The costs of this bill fall within budget function 270.

Basis of estimate: CBO assumes that all amounts authorized will be appropriated and that spending will occur at historical rates for similar research and development programs. The authorization levels for all years are established in the bill.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: None.

9. Estimate prepared by: Kim Cawley.

9. Estimate approved by: C.G. Nuckols for James L. Blum, Assistant Director for Budget Analysis.

Regulatory Impact Evaluation

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact that would be incurred in carrying out S. 488.

The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals and businesses. The bill contains authorizations for research, development and demonstration programs of the Secretary of Energy and directives to the Secretary with respect to the operation of these programs. Any involvement of private firms and individuals in these research, development and demonstration programs is voluntary.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy from the bill.

Little, if any, additional paperwork would result from the enactment of S. 488.

EXECUTIVE COMMUNICATIONS

The Committee requested reports on S. 488 from the Departments of Energy, Defense, and Housing and Urban Development, the Office of Management and Budget, the Export-Import Bank, the Agency for International Development, and the National Institute of Standards and Technologies.

The pertinent legislative reports and communications received by the Committee setting forth Executive agency recommendations relating to S. 488 follow:

EXPORT-IMPORT BANK OF THE UNITED STATES,
Washington, DC, April 5, 1989.

Hon. J. BENNETT JOHNSTON,
U.S. Senate,
Washington, DC.

DEAR SENATOR JOHNSTON: In your letter of March 7, you requested the views of the Export-Import Bank of the United States on S. 488, "The Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989."

In general, Eximbank has no objections to the proposed bill. We note, however, that Section 6(c) calls for a representative of "the Director of the Export-Import Bank" to be a member of the Advisory Subcommittees on Photovoltaic Energy Technology, Wind Energy Technology, Solar Thermal Technology and Renewable Energy and Energy Efficiency Technology Exports.

Please be advised that Eximbank is headed by a Board of Directors and not a single Director. Moreover, under Section 2(b)(1)(c) of the Export-Import Bank Act of 1945, as amended, the Board of Directors is already required to name a Bank officer who shall advise the President of the Bank on ways of promoting nonnuclear renewable energy resources and who shall also act as a liaison between the Bank, the Department of Commerce and other appropriate departments and agencies.

For these reasons, we suggest that the phrase "the Director of the Export-Import Bank" be replaced wherever it appears in S. 488 by the phrase "the Export-Import Bank". It would also be our intention to appoint as the Eximbank representative to the advisory committee established in S. 488 the same officer already named under Section 2(b)(1)(C) of the Eximbank Act.

The Office of Management and Budget advises that there is no objection to the submission of this report from the standpoint of the Administration's programs.

Sincerely,

WILLIAM F. RYAN,
Acting President and Chairman.

CHANGES IN EXISTING LAW

In compliance with paragraph 12, of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill S. 488, as ordered reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is

printed in italic, and existing law in which no change is proposed is shown in roman):

NATIONAL ENERGY CONSERVATION POLICY ACT

Public Law 95-619, as Amended

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—GENERAL PROVISIONS

SEC. 101. SHORT TITLE AND TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "National Energy Conservation Policy Act".

* * * * * * *

SEC. 256. DOMESTIC RENEWABLE ENERGY INDUSTRY AND RELATED SERVICE INDUSTRIES.

(a) It is the purpose of this section to implement the responsibilities of the United States under chapter VII of the international energy program with respect to development of alternative energy by facilitating the overall abilities of the domestic renewable energy industry and related service industries to create new markets.

(b)(1) Before the later of—

(A) 6 months after the date of the enactment of this section, and

(B) May 31, 1985,

the Secretary of Commerce shall conduct an evaluation regarding the domestic renewable energy industry and related service industries and submit a report of his findings to the Congress.

(2) Such evaluation shall include—

(A) an assessment of the technical and commercial status of the domestic renewable energy industry and related service industries in domestic and foreign markets;

(B) an assessment of the Federal Government's activities affecting commerce in the domestic renewable energy industry and related service industries and in consolidating and coordinating such activities within the Federal Government; and

(C) an assessment of the aspects of the domestic renewable energy industry and related service industries in which improvements must be made to increase the international commercialization of such industry.

(c)(1) On the basis of the evaluation under subsection (b), the Secretary of Commerce shall, consistent with existing law, establish a program for enhancing commerce in renewable energy technologies and consolidating or coordinating existing activities for such purpose.

(2) Such program shall provide for—

(A) the broadening of the participation by the domestic renewable energy industry and related service industries in such activities;

(B) the promotion of the domestic renewable energy industry and related service industries on a worldwide basis;

(C) the participation by the Federal Government and the domestic renewable energy industry and related service industries in international standard-setting activities; and

(D) the establishment of an information program under which—

(i) technical information about the domestic renewable energy industry and related service industries shall be provided to appropriate public and private officials engaged in commerce, *and to potential end users, including other industry sectors in foreign countries such as health care, rural development, communications, and refrigeration, and other,* and (ii) marketing information about [export opportunities] *export and export financing opportunities* shall be available to the domestic renewable energy industry and related service industries.

(3) Necessary funds required for carrying out such program shall be requested in connection with fiscal years beginning after September 30, 1984.

(d)*(1)* There shall be established an interagency working group which, in consultation with the representative industry groups and relevant agency heads, shall make recommendations to coordinate the actions and programs of the Federal Government affecting commerce in renewable energy products and related services. The Secretary of Energy shall be the chairman of such group. The heads of appropriate agencies may detail such personnel and may furnish such services to such working group, with or without reimbursement, as may be necessary to carry out its functions.".

(2) The interagency group shall establish a program to inform other countries of the benefits of policies that would allow small facilities that produce renewable energy and energy efficiency to compete effectively with producers of energy from non-renewable sources.

* * * * * * *

SEC. 522. FEDERAL SOLAR PROGRAM.

The Secretary, in consultation with the Administrator of the General Services Administration, shall develop and carry out a program to demonstrate the application to buildings of solar heating and solar heating and cooling technology in Federal buildings.

SEC. 523. DUTIES OF SECRETARY.

(a) DUTIES.—In exercising the authority provided by section 522, the Secretary, in consultation with the Administrator of the General Services Administration, shall—

(1) promulgate, by rule—

(A) requirements under which Federal agencies shall submit proposals for the installation or solar energy equipment in Federal buildings which are under their control and which are selected in accordance with procedures set forth in such rule, and

(B) criteria by which proposals under subparagraph (A) will be evaluated, which criteria shall provide for the inclusion in each proposal of a complete analysis of the

present value, as determined by the Secretary, of the costs and benefits of the proposal to the Federal agency, and for the demonstration, to the maximum extent practicable, of innovative and diverse applications to a variety of types of Federal buildings of solar heating and cooling technology, and for location of demonstration projects in areas where a private sector market for solar energy equipment is likely to develop;

(2) evaluate in writing each such proposal pursuant to the criteria promulgated pursuant to paragraph (1)(B), and make such evaluation available to the agency and, upon request, to any person;

(3) provide technical and financial assistance by interagency agreement for implementing a proposal evaluated under paragraph (2) and approved by the Secretary; except that such assistance shall be limited to the design, acquisition, construction, and installation of solar energy equipment;

(4) provide, by rule, that Federal agencies report to the Secretary periodically such information as they acquire respecting maintenance and operation of solar energy equipment for which assistance is provided under paragraph (3);

(5) require that a life cycle cost analysis in accordance with part 3 be done for any Federal building for which a proposal is submitted under this section and the results of such analysis be included in such proposal; and

(6) if solar energy equipment for which assistance is to be provided under paragraph (3) is not the minimum life-cycle cost alternative, require the Federal agency involved to submit a report to the Secretary stating the amount by which the Life-cycle cost of such equipment exceeds the minimum life-cycle cost.

(b) CONTENTS OF PROPOSALS.—Proposals under paragraph (1)(A) of subsection (a) shall include a list of the specific Federal buildings proposed to be provided with solar energy equipment, the funds necessary for the acquisition and installation of such equipment, the proposed implementation schedule, maintenance costs, the estimated savings in fossil fuels and electricity, the estimated payback time, and such other information as may be required by the Secretary.

(c) INITIAL SUBMISSION OF PROPOSALS.—Under the requirements established under subsection (a)(1)(A), initial proposals for the installation of solar enegy equipment in Federal buildings selected under subsection (a)(1)(A) shall be submitted not later than 180 days after the date of promulgation of the rule under subsection (a)(1).

(d) In order to more widely disseminate information about the program under this part and under part 3 and the benefits of renewable energy and energy efficiency technology, the Secretary shall establish a program which includes site visits and technical briefings, to disseminate such information to Federal procurement offi-

cers and Federal loan officers. The Secretary shall utilize available funds for the program under this subsection.

* * * * * * *

TITLE 10—ARMED FORCES

* * * * * * * *

§ 2857. Use of renewable forms of energy in new facilities

(a) The Secretary of Defense shall encourage the use of energy systems using solar energy or other renewable forms of energy as a source of energy for military construction projects (including military family housing projects) where use of such form of energy would be practical and economically feasible.

(b)(1) The Secretary concerned shall require that the design of all new facilities (including family housing) shall include consideration of energy systems using solar energy or other renewable forms of energy in those cases in which use of such form of energy has the potential for [significant savings of fossil-fuel-derived energy.] *reduced energy costs.*

* * * * * * *

FOREIGN ASSISTANCE ACT OF 1961

AN ACT To Promote the Foreign Policy, Security, and General Welfare of the United States by Assisting Peoples of the World in Their Efforts Toward Economic Development and Internal and External Security, and for Other Purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as "The Foreign Assistance Act of 1961".

* * * * * * *

SEC. 234. INVESTMENT INSURANCE AND OTHER PROGRAMS.—The Corporation is hereby authorized to do the following:

* * * * * * *

(e) SPECIAL ACTIVITIES.—To administer and manage special projects and programs, including programs of financial and advisory support which provide private technical, professional, or managerial assistance in the development of human resources, skills, technology capital savings and intermediate financial and investment institutions and cooperatives and including the initiation of incentives, grants, and studies for renewable energy and other small business activities. The funds for these projects and programs may, with the Corporation's concurrence, be transferred to it for such purposes under the authority of section 632(a) or from other sources, public or private. *Administrative funds may not be made available for incentives, grants, and studies for renewable energy and other small business activities.*

○